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ABSTRACT

An instructional program was developed and implemented to help four first-grade students use an Atari 800 microcomputer. To determine the extent to which the four students and 40 teachers were familiar with computers and to judge their attitudes toward using them in classrooms, a survey was administered. While teachers' responses varied, all students had no previous experience with computers and were eager to use them. The instructional program was then developed to increase children's awareness of the capabilities of the computer, to increase familiarity with the operation of the computer, to assist and instruct children in programming and running programs, and to enable children to work comfortably with and instruct their peers. The program consisted of (1) pretesting students for prior knowledge; (2)instruction in terminology, operation, programming, and game playing; and (3) posttesting and evaluations. Plans were made to produce a handbook for teachers that would provide directions for operating computers and examples of simple programs. After 9 weeks of experience, the children were able to use the computer with ease. (Related materials are appended.) (Author/RH)

A NEW COMPUTER! CAN I USE IT?

by

MILDRED L. ZIGICH

A Practicum Report

Submitted to the Faculty of the Center for the Advancement of Education of Nova University in partial fulfillment of the requirements for the degree of Master of Science

December/1982

I hereby testify that this paper and the work it reports are entirely my own. Where it has been necessary to draw from the work of others, published or unpublished, I have acknowledged such work in accordance with accepted scholarly and editorial practice. I give this testimony freely, out of respect for the scholarship of other workers in the field and in the hope that my own work, presented here, will earn similar respect.

ABSTRACT

A New Computer! Can I Use It?
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Descriptors: Addition/Associative-Learning/Attention/Attention-Span/Cognitive-Ability/Cognitive-Development/Computer-Assisted-Instruction/Computer-Games/Curriculum-Development/Educational-Games/Educational-Technology/Elementary-Education/Games/Grammar/Inservice-Education/Kindergarten/Language-Skills/Letters-Alphabet/Mathematics/Mathematics-Application/Mathematics-Instruction/Memory/Microcomputers/Micro-Instructional Software/Numbers/Preschool-Education/Primary-Education/Problem-Solving/Readiness/Reading-Comprehension/Recreational-Activites/Science/Shared Services/Social Studies/Spatial-Perception/Spelling/Spelling-Instruction/Story-Reading/Story-Telling/Subtraction/Word-Lists/Word-Recognition/Word-Study-Skills

The author developed and implemented a program to acquaint four first graders with an Atari 800 computer. The program's aims were to make the children aware of the capabilities of the oomputer, to familiarize them with the operation of the oomputer, to assist and instruct them in programming the computer and then executing the program, and finally, to enable the children to feel comfortable enough in the use of computers to

be able to work with and instruct their peers. Because of the young ages of the children and the recent acquisition of the computer, instruction began on an introductory level.

The program consisted of pretesting the students for prior knowledge, instruction in terminology and operation as well as in programming and game-playing, post testing and evaluations, and a follow-up handbook for teachers. The parents of the children, the children themselves, and the media-specialist were all favorably impressed by the expertise of the children at the end of the nine week period. They were able to read, type and use the computer easily. (Appendices include information surveys for teachers and students, a pretest and posttest, a permission for parents to sign, and a copy of the award of completion given at the end of the classes.)

TABLE OF CONTENTS

CHAPTER I

PURPOSE

The school in which the practicum study took place is twenty-four years old. It is a well-kept facility, located in the southwest section of one of the largest counties in the United States. Children who attend this school come from a low-middle class to middle class environment economically with three hundred ninety of the eight hundred seventy-five pupils receiving free or reduced price lunches. Eligibility is based on family size and income. The ethnic makeup of the school is 38.7% white, 37.5% Hispanic, 23.7% black, and .1% Asian. The majority of parents work before, during, and after school hours making parental participation and involvement minimal. However, it has been observed that the parents of the more gifted children tend to be more willing to cooperate and will make adjustments in order to promote better education for their children.

The school itself consists of a main building housing twenty traditional classrooms, offices, bathrooms, and a library spread over three wings. Two six-pack buildings are set up for team teaching over the total space or are partitioned into two classrooms. One four-pack building houses the four kindergarten classes and two relocatable buildings house the varying exceptionalities and Spanish classes respectively. The total enrollment varies between 860 and 900 students with quite a bit of transiency. The writer teaches in a comfortable double

classroom equipped with air-conditioning and carpet. It is a team teaching situation with sufficient room for two teachers and the class of 48 first graders.

The faculty of this school consists of the principal, assistant principal, and thirty-four regular classroom teachers. Services are provided by two learning disabilities teachers, one varying exceptionalities teacher, one English as a Second Language teacher, and one Basic Curriculum Content in Spanish teacher. These are part time programs offering help and remediation to students for varying amounts of time during the school day. Two physical education teachers, one art teacher, one full time and one part time music teacher offer these classes to grades two through six. In addition, classes are offered to all students in Spanish for Spanish Speakers and to second through sixth grade students in Spanish as a Second Language. Two teachers share the duties of the Spanish program. Finally, a media specialist maintains an open-library program as well as providing specialized instruction in literature, expressive language, and library skills.

The curriculum of the school is firmly structured with emphasis on the basic skills. An accent is being made to provide an amount of enrichment equal to the amount of remediation. Emphasis is on the balanced curriculum in all areas.

The problem, as addressed in this practicum study, is that a new computer has arrived in the school. However, no one but

the media specialist is qualified or has the knowledge to run it. Because of this, without training and/or instruction, the computer will be a piece of useless machinery. The media specialist does not have the time or the materials available to train teachers and the school was advised that an inservice workshop could be taught only if there was one computer for every two interested teachers. One computer is available for 34 teachers! As teachers become trained, they should be more willing to let students use the computer for purposes of enrichment. As students become trained, they will be eligible to spend free time "playing with", programming, and utilizing the computer. As the world becomes more computerized, the students with a workable knowledge of computers will have an advantage in all facets of their school, home, and business lives. The writer feels that first graders should be exposed to this new technology just as they will be exposed to as many other facets of education as possible. In choosing these children capable of enrichment, basic prerequisites will have been met and advanced learning, above and beyond the basics, will be possible.

The practicum study was conducted with a select group of four first graders from the writer's classroom. These students, three girls and one boy, were chosen because of their aptitude for reading as evidenced by performance and by recommendation of their kindergarten teachers. They are capable of and desired enrichment activities in addition to regular

developmental learning. The program required cooperation between the principal, the media specialist, the parents, the students, and the writer. Without administrative approval; help in scheduling, instruction, and operation from the media specialist; cooperation from the parents; and enthusiasm and cooperation from the students; the project would not have been successful. The children met for a one hour session each Monday over a period of seven weeks. As this was after school hours, it entailed new arrangements for getting the children home.

In order to ascertain the existence of a problem, a survey was conducted with the 4 students and 40 teachers. The survey covered prior training in computer education or prior knowledge of computers. It indicated exposure to computers, interest in the subject, and desire, (or lack of it), to know more. The results of the surveys were interesting.

Of the forty teachers surveyed, twenty-seven responded. All were aware that a new computer was in the school. Twenty-two were interested in using the computer but only eighteen wanted their students to use it. Six teachers had had computer instruction and ten teachers had used a computer sometime in the past. Of the four students surveyed, all responded. They had no choice as the writer read the questions orally and the students responded! All four knew of the existence of the computer, wanted to use it, and were willing to stay

after school to do so. None of them had any prior exposure to a computer other than Video Games owned by three of the children.

On the pretest given, the children averaged a score of six out of a possible ten points. Questions concerning terminology about the machine and knowledge of its functions were the primary mistakes made. At the end of the nine weeks, a posttest showed an average score of 8.75 out of a possible 10 points with knowledge of the disk drive being the weakest point. It had been used only onoe.

The attitudes of the children were enthusiastic all during the program. With only four children, and an hour of work time, each child had ample opportunity to use the computer on a rotational basis. Even when the writer had difficulty making a program work, the children were patient and well-behaved. Other teachers and children were amazed and encouraged to see such little children actively using the computer. In a followup evaluation of the program, two of the four parents interviewed plan to buy computers for Christmas because of their children's interest in such.

In the weeks to come, the handbook for teachers will be completed. This is being done with the help of the media specialist and is conourrent with a class in Computer Education being taught as an in-service in the school.

CHAPTER II

RESEARCH

Several interesting studies have been done on the use of computers with young children, many of them with hands-on experience in the classroom. The research points to computer use as an effective tool for enrichment as well as remediation.

Joan Wolfe in Parents as Partners in Exceptional Education[1] gives hints on communicating with parents that were of help in the composition of an introductory letter to the parents of the children involved.

Various programs conducted with young children are discussed by Rachel Wrege in the article Hands On[2], Denyse Forman in Instructional Use of Microcomputers[3], and Jack Powell's Computer-Based Instruction in Early Childhhod, Education at the University of Georgia: A Proposed Innovation[4].

In each of these studies, the age of the child had no effect on his ability to use the computer with proper training. Margaret Wang and Robert Fitzhugh spoke of using the computer as a record keeping device as well as a teaching tool in Planning Instruction and Monitoring Classroom Processes With Computer Assistance[5]. Their situation in the classroom was very similar to that of the writer except that a computer was assigned to their class alone and accessibility was magnified.

Much of the reporting done was on individual systems or classes and in teaching specific course work. Some programming was instituted by John Fletcher in Computer-Based Instruction in Reading: Grades K-3[6] and in Computer Assisted Instruction in Beginnning Reading: The Stanford Projects[7]. Dorothy Cox and Carl Berger speak of computers as aids in problem solving in Microcomputers are Motivating[8]. Although their subjects were seventh and eighth graders, their point that the size of the target group is important was influential in the writer's study.

The LOGO language used in computer study was the basis of Cynthia Solomon's and Seymore Papert's work, A Case Study of A Young Child Doing Turtle Graphics in LOGO[9] and Andy Disessa's article Turtle Escapes the Plane: Some Advanced Turtle Geometry[10]. "Turtle" refers to a system of teaching math to primary children. It was developed at MIT. Howard Austin defines LOGO as "the creation of truly independent intellectual agents" and states that programming is much easier for children than for adults. In this article, Teaching Teachers LOGO, the Lesley Experiments[11], teachers were able to learn to program as an extension of use of the "turtle sequences" but adult inhibitions and fear of machines made them slower learners than the children.

Research also turned up a list of many interesting primary games to be played with the computer. This list, with its accompanying descriptions, will be incorporated into the handbook for teachers as a suggestion for ordering materials

when funds are available.

As the Monday workshops progressed, so did the writer's classes in "Microcomputing in the Curriculum, Computer Literacy, and Software Search and Evaluation". In this way, it was possible to stay one step ahead of the students. Through research and talking with the instructor of this class, it was possible to implement programs and programming for the students. The writer also had access to the expertise of the instructor of the aforementioned class for advice on programming.

Though much of the research conducted on teaching computer use to children is done when accessibility to the computer itself is easy, it was not a problem adapting ideas to the available time alloted to the program. Because of the excellent cooperation received from the principal, the media specialist, and the children's parents, it was possible to teach use of preexisting software programs and simple programming to a group of advanced first graders within the framework of a one-hour once-a-week workshop.

The number of children chosen for the study was influenced by the opinions of Dorothy Cox and Carl Berger in Microcomputers are Motivating[12]. They mentioned that more than five students at a time become restless and are not able to see the screen or use the keyboard often enough. For this reason, the writer used only four students ranging in age from five to eight years.

Since Howard Austin in Teaching Teachers LOGO, the Lesley Experiments[13] continues to stress that preconceived ideas,

fear of machines, and natural inhibitions make teachers much slower at learning to be independent at programming, the writer will address this problem in the handbook. Making teachers see that their feelings of fear are not unique or unreasonable may make the task of learning computer language easier. Michael Potts, author of Computer Pioneer[14], was able to take the plunge into computer use with his class of second graders and felt that the computer became a beneficial tool for tutoring, enrichment, and recordkeeping. The writer developed confidence from reading that time, patience, and accessibility are the only prerequisites to teaching first graders computer use. In reality, the younger the child, the more questing the mind.

Finally, the book, Computers for Kids[15] by Sally Larsen, was invaluable in setting up lesson plans for each of the seven sessions and for quick and easy programs to illustrate each new concept.

CHAPTER III

METHOD

The first two weeks of the program consisted of laying the groundwork of the program. During the first week, clearance and scheduling was arranged through conferences with the principal and the media specialist. It was established that the writer could conduct a workshop for four first graders from 1:45 to 2:45 every Monday afternoon for a period of seven weeks. This time was used by the writer to work out programs on the computer so as to be prepared for teaching.

During the second week, an interest survey was administered to all forty-five children in the class and through results of the survey (Appendix B), close teacher observation, and talks with former teachers, four target children were chosen. Letters were sent to the parents of these children to obtain permission to stay after school hours to participate in the program. These letters had to be returned before the program could begin (Appendix E). Questionaires were sent to all teachers on the staff to ascertain their prior computer knowledge and/or interest (Appendix A). This survey was tabulated and results were in Chapter I.

After scheduling was complete and all permission forms had been secured, the first of the seven weekly sessions

was held. This first workshop began on the third week of the project. The pretest of basic knowledge of the keyboard, a few basic words, and a check on rules was given (Appendix C). Homework was assigned to think of some ideas to program. Examples were given of getting dressed for school, going for a swim in the pool, baking cookies. The writer suggested thinking of the steps involved in making a pizza or ways that you might lose your allowance. Terms were taught such as "READY", "RUN", "PRINT", "basic", "start", and "end". A book about computers was examined. A trip was made to the computer room where each child was allowed to type his or her name. By using the ";" or ",", the child's name appears on the screen multiple times. This was a big thrill; both the typing and seeing the name appear on the screen. Each child got a turn, reviewed terms, and was sent home to think of the homework.

In the fourth week's session, the writer and students talked about flowcharts. The teacher showed an example of how to make a pizza as shown by a flowchart and then drew charts of each child's ideas. Debra chose getting dressed, Siju wanted to go swimming, Lori charted washing dishes, and Cathy got ready for a trip. Homework was assigned to draw their own flowchart now that they had seen the writer's. A review was conducted of the flash cards made for "RUN", "READY", "PRINT", "basic", "start", and "end". On a trip to

the computer room, the writer wrote a quick program using line numbers and input statements. The program then stated "My name is ____." "I am ___ years old." Each child had a chance to type in the program and then run it inputting his or her own name. As errors were made, it became easy to teach editing by retyping the line or moving the cursor. The original time schedule did not call for programming until the fifth week but we couldn't wait! The class finished on a note of expectation for the next session and more use of the machine.

At the beginning of session five, the writer typed in a program asking the child to pick a number, then pick another number. The computer added the two numbers and the child who was in control of the computer would try to beat the computer in finding the sum. As each child had his or her turn, they enjoyed this simple addition game immensely. This game gave practice in addition facts and was enjoyable at the same time. The children are now becoming comfortable with the "READY" message and with "RUN" and "LIST" on the programming. The writer personalized the messages with "Terrific! You are right!" or "Oops, you are wrong. Try again." The children loved it and we were all disappointed when the bell rang.

Week six involved each child with programming. As the program was dictated by the writer and written by the child, special attention was called to quotation marks, correcting error messages, skipping lines by writing "PRINT", editing by moving the cursor, and printing arithmetics and variables. However, there was an error message that the writer could not

alleviate. The program, from the Atari Basic Manual[16], was an addition program. Each of the children typed some of the program, correcting errors and typing line numbers. However, several error messages appeared and after much wasted time and frustration, we went back to a program where each child got a chance to fill in an addition answer. The children were good and thank goodness, there were only four! It was a good experience for them to see that this type of thing happens to programmers all the time. In spite of the writer's frustration, the children finished up with a little time to put in the missing numbers to a given program and left with a good feeling. They have become quite confident with the computer and have learned how to spell "PRINT", "RUN", and "END" with no help. Plans will have to be continued into next week.

In week seven, the children typed in a prewritten program. By so doing, they are familiarizing themselves with the numbering process, deletions, back spacing, terms such as "PRINT", "GOTO", "RUN", and "LIST". Errors are made and corrected. The children automatically know to use Shift before ". Our math programs consisted of an addition quiz and a random (RND) number quiz. The students enjoyed the commands programmed in like "Terrific!", "You are right!", "Sorry.", "Try again". A fortune telling program was put in with instructions to choose #1,2, or 3. Depending on the choice, the answers were: #1:"You will be rich.", #2: "You will be famous.", #3: "You will have 13 children." In the program, variables A,B, and C were printed as well as a data

line. It was seen how to add additional numbers to the data line. Variables were input by the students. We received many error messages and used the directionals with CTRL to edit as well as typing line numbers. The writer familiarized the children with the mathematical signs. We used "PRINT" to skip lines and INPUT variables. In the program, it was seen how to use GOTO to get back to the beginning. What a busy session! Last week's failures did not dim anyone's enthusiasm and the writer spent several hours at the computer prior to Monday's session so we could accomplish all this in one fun-filled hour! The teacher's preparation definitely counts!!

In the eighth week, two programs were written and run by the children using string variables, "PRINT", "GOTO", and "INPUT". "RND" inserted a random number or letter into the program. "FOR-NEXT" created a loop and "IF-THEN" gave us some optional answers in the Print statement. A random number was guessed first, and then a random letter. The children took turns typing in the lines of the program. First they had to pick a number between 1 and 10 and then they were told whether their answer was correct or not. The second program told them to pick a letter of the alphabet. The answer was chosen at random and clues were given. For example, if the answer input was "C" and the computer had chosen "M", it would tell the child to pick a larger letter or a smaller letter until the letter was guessed.

Week nine began with a posttest (Appendix F) that convinved the writer that progress had been made. The results are shown in Chapter I and great improvement in knowledge showed up. The class finished up with a prepared disc of "Letterman"[17], an Atari version of "Hangman". Each child got two turns. We used Thanksgiving words which the children had been studying all the week before, in Spelling. The teacher has an option to input the words herself and thus this program is suited to all ages. The children knew that this was the last session and they begged to play just one more game. As an ending activity, certificates of completion (Appendix D)[18] were awarded praising the students for their creativity. It was promised that now that these four students are so knowledgeable, they may be able to go alone to the library to use the computer. We all hated to see the program end!

CHAPTER IV

RESULTS

The evaluation of the nine week practicum took place in many ways.

Initially, a ten point pretest was given which measured prior knowledge of the keyboard, basic vocabulary, and rules. The four children's scores were as follows:

Debra	+7	Cathy	+5
Lori	+6	Siju	+6

Given this as a basis for growth, progress was constantly monitored. After week four's lesson on flowcharting, the children brought in flowcharts that they had done at home. All had followed the prescribed pattern as had been demonstrated in a small session before work on the computer.

Each week's session began in the classroom. Here we would review what had been done the previous week, review the flash cards with the operational words: "RUN", "PRINT", "READY", "END", and "LIST", and discuss plans for the day. Then, a trek down the hall to the computer room. Each week the children remembered who got to start first. It had been established in the first session that the first turn would be given alphabetically by first name. So, the children worked on the skills of alphabetizing and memory as well as on reading, math, and computer skills.

As the weeks progressed, the children quickly showed their mastery of typing and memorization of commands. They remembered to push "RETURN" at the end of each line and to type "RUN" when they wanted to start the program. In session five, the mastery of addition facts was demonstrated as the children tried to "beat the computer" to the answer.

With the frustration of a non-operational program on week six, it was rewarding to see how the children had grown in maturity and attitudes. Full of suggestions on how to "fix" the program, they remained quiet and undeterred. Realizing, however, that their attention span and enthusiasm could have its limits, the writer erased the troublesome program and substituted another. Hooray! Enthusiastic response!

Each child had a turn at the keyboard and a turn to answer the questions presented. The other children found it difficult but not quite impossible to avoid telling the answer if they knew it. As has been mentioned, four children were plenty. It is doubtful if any more could have waited for the necessary time between turns.

The use of games was deliberately withheld until the last session as several authors had advised that once games were started, programming lost its luster. True enough, each child wanted another turn and another, but at this point, it was an effective finale.

The results of the posttests showed an almost 30% rise in average scores. The scores are as follows:

Debra	+8 up 1 point	Cathy	+9 up 4 points
Lori	+10 up 4 points	Siju	+8 up 2 points

More important than the rise in scores is the rise in self-esteem. There were no negatives to the program as the writer and/or the students see it. The students were well behaved, interested, and they learned. The size of the group was ideal, their attendance was perfect, and as evidenced by the increase in scores, they obviously learned! We all enjoyed the program immensely and the writer would look forward to doing it again.

CHAPTER V

RECOMMENDATIONS

As the computer is new in the school, the primary teachers need some encouragement to use it and to arrange for schedules for their children to use it. It has been the experience of the media specialist that new equipment often sits unused because of teacher apathy or lack of familiarization with it causing lack of confidence in its use. Hopefully, the handbook that the writer will prepare will alleviate this problem. As was stated in Chapter I, only six of the twenty-seven teachers who responded to the survey had had any instruction in computer use. The handbook will list the basic terms of "BASIC" as well as directions on how to operate the machine. Directions on how to turn it off and on, how to load the cassette and disc drives, how to retrieve a program from the diso drive (DOS) or a program from the cassette (CLOAD) will be discussed and illustrated. When the teachers have had ample time to become familiar with the processes of computer operation, the handbook will go on to a few simple programs that the teacher can then expand for her class.

In effect a teacher's manual, the handbook will now be of use as a guide to lesson plans for working with children on any grade level. With a few simple examples of programming for math drills, the teacher can create her

own drills.

As more teachers become involved with the computer, the demand for software will increase and funds available to the media specialist will be spent for this purpose. Already, as a result of courses taken in Computer Science, the writer has had a chance to request periodicals on computers and through an examination of the ERIC research to order specific software packages.

The four children involved in the practicum study benefited from the immediate instruction, of course, but the results are far-reaching. They felt an increase in self-worth for being singled out and given additional time by the teacher. Problem solving techniques were enhanced. The children are promoting computer awareness in their peer groups and with their families. They now have the knowledge to go alone to the library and with only a little bit of supervision, use the computer thus avoiding a lack of use by primary age children. These children can now act as peer tutors to those who do not have any knowledge of the computer. Their parents will be influential in persuading the PTA to purchase additional computers for the school.

The writer has thoroughly enjoyed the experience. An increased knowledge and awareness of computers, the ability to work through a problem, and the availability of time to practice as a result of this study, have helped in the

"Computer Literacy" class at NOVA University. Working with a small group is always a pleasure and the children were delightful. Finally, increased rapport with the four parents was an added benefit to effective teaching for the rest of the year.

The research gathered, both from the ERIC search, and from the writer's own investigation, has been shared with the media specialist and will be available to other teachers through the handbook. All teachers need to become involved in computer awareness as it is definitely the wave of the future and will be an exciting new teaching tool as its availability increases.

NOTES

[1]Joan S. Wolfe, "Parents as Partners in Exceptional Education", Journal of the College of Education, Ohio State University, XXI (2). (Spring, 1982), pp. 77-81.

[2]Rachel Wrege, "Hands On?", Popular Computing, V1N8 (June 1982): pp. 110-123.

[3]Denepe Forman, "Instructional Use of Microcomputers: A report of B.C.'s Pilot Project", (Discussion Paper, British Columbia, 1981).

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[9]Cynthia Solomon, Seymore Papert, "A Case Study of a Young Child Doing Turtle Graphics in LOGO", National Institute of Education, (Feb. 1982).

[10]Andy Disessa, "Turtle Escapes the Plane: Some Advanced Turtle Geometry", National Science Foundation, (Jan. 1977).

[11]Howard Austin, "Teaching Teachers LOGO: the Leslie Experiments", National Science Foundation, (Jan. 1977), Memo # 336.

[12]Cox and Berger, pp. 28-29.

[13]Austin, Memo # 336.

[14]Michael Potts, "Computer Pioneer", Instructor, V 90 N10 (May 1981), pp. 74-75.

[15]Sally Larsen, Computers for Kids, (Morristown, N.J.: Creative Computing Press, 1981).

[16]Bob Albrecht, Leroy Finkel, and Jerald R. Brown, Atari Basic. New York: John Wiley & Sons, 1979, p. 179.

[17]"Letterman", (Sunnyvale, Ca.: Atari, Inc., 1981).

[18]Beverly Armstrong, Awards Galore (U.S.A.: The Learning Works, Inc., 1981), p. 17.

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APPENDIX A

Information Survey for Teachers

Name_____ Date_____
Grade_____

Please check if applicable:

_____ I know we have a new computer in school.

_____ I am interested in using it myself.

_____ I am interested in having some of my students run it.

_____ I have had a course in computer use.

_____ I have had a course in computer programming.

_____ I have used a computer before.

_____ I am a PacMan, Asteroids, or Donkey Kong addict.*

* This answer will be kept confidential.

APPENDIX B

Information Survey for Students

Name_____ Date_____
Grade_____

Please check if true:

_____ I know we have a new computer in school.

_____ I would like to learn how to use it.

_____ I would like to stay after school to use the computer.

_____ I think someone could pick me up at 2:45 on Mondays.

_____ My parents have a computer at home.

_____ My parents have shown me a computer at their work.

_____ I have TV Video games at home.

My favorite TV Video game is _____.

APPENDIX C

Pretest

Mark T (true) or F (false) on your paper.

___ 1. The base of the computer looks like a typewriter.

___ 2. The base is called a keyboard.

___ 3. On the keyboard are pictures and words.

___ 4. You can see cartoons on the TV screen.

___ 5. We are going to use a coconut to play games on.

___ 6. The lights on the disk drive are green.

___ 7. The computer can play games and solve problems.

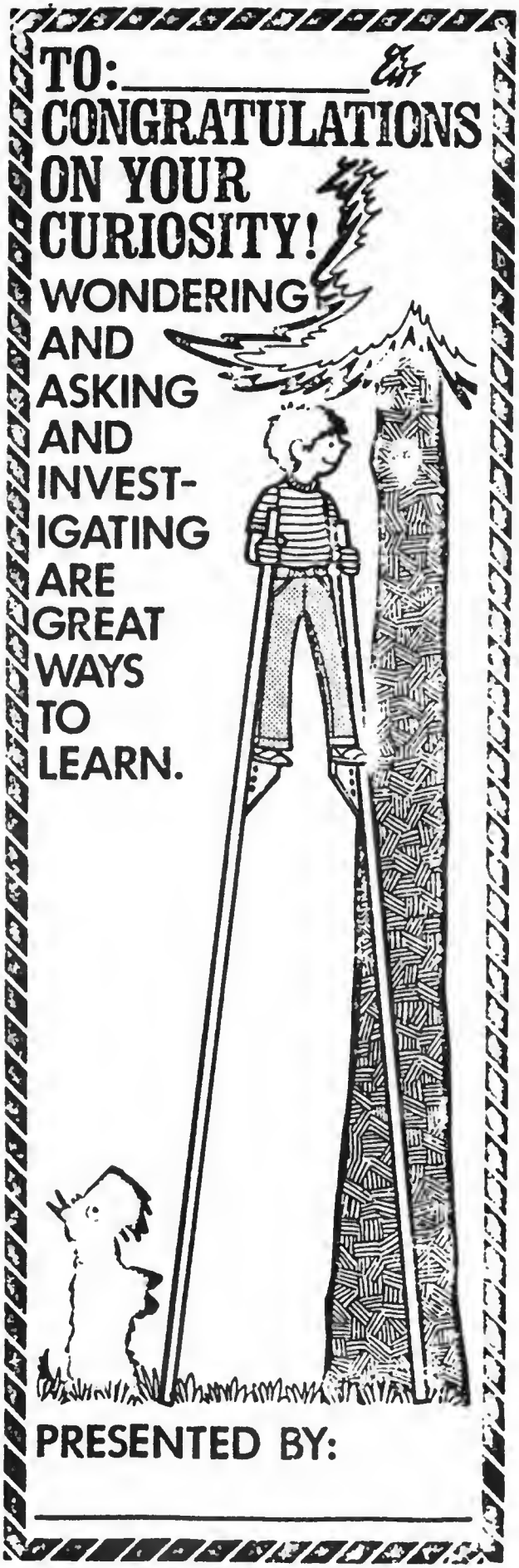
___ 8. When the computer is ready, it prints "GO".

___ 9. Everyone can work at one time on the computer.

___ 10. Those who are not working will be very quiet.

Answers: 1. T 3. F 5. F 7.T 9.F
2. T 4. F 6. F 8.F 10.T

APPENDIX D



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APPENDIX E

Dear Parents,

We are lucky enough to have a new Atari computer in the library. This will be used primarily for enrichment activities for all the children in the school on a class basis. However, children must have certain skills in order to effectively use the computer. As a special privilege, I have been given permission by the principal to conduct a workshop for a limited number of advanced first graders.

The workshop will be held from 1:45 to 2:45 on the next 7 Monday afternoons beginning on _____. If you are willing to have your child attend, please make arrangements for _____ to get home at 2:45.

Thank you,

_____
Teacher

My child, _____, has my permission to attend the workshop every Monday afternoon for 7 weeks.

Signed _____
Parent

Date _____

APPENDIX F

Post-test

Name_____ Date_____

Mark T(true) or F (false) on your paper.

___ 1. The base of the computer looks like a piano.

___ 2. The base is called a keyboard.

___ 3. The computer shows letters and numbers.

___ 4. You can see cartoons on the screen.

___ 5. We played games on a coconut.

___ 6. The lights on the disk drive are light green.

___ 7. The computer can play games and solve problems.

___ 8. When the computer is ready, it prints "GO".

___ 9. Everyone can work at one time on the computer.

___ 10. I was very quiet when it was not my time to use the computer.

Answers: 1.F 3.T 5.F 7.T 9. F
2.T 4.F 6.F 8.F 10.?